

Amendments to the Claims:

This listing of claims replaces all prior listings, and versions, of claims in the present application.

Listing of Claims:

1. (Currently Amended) A transmitter for use in a communication system comprising:

a signal folder adapted to receive a time-compressed representation of a binary signal formed of symbols, said signal folder for rearranging the time-compressed representation of the signal into rearranged form by positioning real-valued parts of the symbols thereof adjacent to one another and by positioning imaginary-values parts of the symbols adjacent to one another; a signal wherein a plurality of complex time samples are modulated on an in-phase carrier; and

an envelope shaper adapted to receive the time-compressed representation of the signal, once rearranged into rearranged form by said signal folder, said envelope shaper for forming an envelop-shape signal, the envelop-shaped signal formed by modulating indications of selected real-valued parts onto an in-phase carrier and by modulating indications of selected imaginary values parts onto a quadrature-phase carrier for shaping the envelope of the signal.

2 (Currently Amended) A Apparatus for a receiver for use in a communication system that receives a partial response orthogonal frequency division multiplexing signal formed of symbols, said apparatus comprising:

a signal unfolder for reconstructing a signal comprising a plurality of complex time samples modulated on an in-phase carrier.

a phase extractor adapted to receive indication of the partial response orthogonal frequency division multiplexing signal, said phase extractor for extracting, from the indications, signs of in-phase components of the symbols of the partial response

orthogonal frequency division multiplexing signal;

a magnitude determiner adapted to receive the indications of the partial response orthogonal frequency division multiplexing signal, said magnitude determiner for determining magnitudes of each of the symbols of the partial response orthogonal frequency division multiplexing signal, the signs extracted by said extractor and the magnitudes determined by said magnitude determiner forming an unfolded signal; and

a zero padder adapted to receive indications of the unfolded signal, said zero padder for adding a selected number of zero values to the unfolded signal.

3. (Currently Amended) A communication system comprising:

~~a transmitter wherein a first signal is rearranged such that a plurality of complex time samples are modulated on an in-phase carrier and an envelope of the signal is shaped to create a second signal~~ having a signal folder adapted to receive a time-compressed representation of a binary signal formed of symbols, said signal folder for rearranging the time-compressed representation of the signal into rearranged form by positioning real-valued parts of the symbols thereof adjacent to one another and by positioning imaginary valued parts of the symbols adjacent to one another, and having an envelop shaper adapted to receive the time-compressed representation of the signal, once rearranged, said envelope sharper for forming an envelope-shaped signal formed by modulating indications of selected real-valued parts onto an in-phase carrier and by modulating indications of selected imaginary valued parts onto a quadrature-phase carrier; and

a receiver in communication with the transmitter through a noisy channel for receiving said second signal comprising a the plurality of complex time samples modulated on an in-phase carrier, wherein the receiver reconstructs said first signal from the envelope shaped second signal.

4. (Currently Amended) A method for shaping an envelope of a complex signal, composed of a plurality of sample symbols with a real part and imaginary part, by keeping the amplitude of each of said sample symbols at or below a threshold value, said method comprising the steps of:

rearranging a first signal in time domain;

obtaining the amplitude of one of said sample symbols of said first signal;

comparing the amplitude of said one of said sample symbols to said threshold value;

the amplitude and sign of the real part of each of a ~~second~~ set of a plurality of sample symbols to the amplitude and sign of the real part of said one of said sample symbols, if the amplitude of the real part of said one of said sample ~~symbol~~ symbols is equal to or less than said threshold value;

setting the imaginary part of each of a ~~second~~ the set of a plurality of sample symbols to the amplitude value equal to said threshold value minus the amplitude of the real part of said one said sample symbols and wherein the sign of the imaginary part of each of a ~~second~~ the set of a plurality of sample symbols is the sign of the real part of said one of said sample ~~values~~ symbols, if the amplitude of the real part of said one of said sample ~~symbol~~ symbols is equal to ~~of~~ or less than said threshold value;

setting the sign of the real part of each of a ~~second~~ the set of a plurality of sample symbols to positive and the amplitude of real part of each of a ~~second~~ the set of a plurality of sample symbols to half the amplitude of the real part of said one of said sample symbols, if the amplitude of the real part of said one of said sample ~~symbol~~ symbols is greater than said threshold value; and

setting the sign of the imaginary part of each of a ~~second~~ the set of a plurality of sample symbols to negative and the amplitude value of the imaginary part of each of a ~~second~~ the set of a plurality of sample symbols equal to one half the amplitude of the real part of said one said sample symbols, if the amplitude of the real part of said one of said sample ~~symbol~~ symbols is greater than said threshold value.

5. (Currently Amended) The method of claim 4 wherein the steps of rearranging, obtaining, comparing, setting the imaginary part, setting the sign of the real part, and setting the sign of the imaginary part ~~the method~~ are repeated for each of said plurality of sample symbols.

6. (Currently Amended) A method for shaping an envelope of a complex signal, composed of a plurality of sample symbols with a real part and imaginary part, by keeping the amplitude of each of said sample symbols at or below a threshold value, said method comprising the steps of:

rearranging a first signal in time domain;

obtaining the amplitude of one of said sample symbols of said first signal;

comparing the amplitude of said one of said sample symbols to said threshold value;

the amplitude and sign of the real part of each of a ~~second~~ set of a plurality of sample symbols to the amplitude and sign of the real part of said one of said sample symbols, if the amplitude of the real part of said one of said sample ~~symbol~~ symbols is equal to or less than said threshold value;

setting the amplitude of the imaginary part of each of a ~~second~~ the set of a plurality of sample symbols to the square root of (the square of said threshold value minus the square of the amplitude of the real part of said one of said sample symbols) and wherein the sign of the imaginary part of each of a second set of a plurality of sample symbols is the sign of the real part of said one of said sample ~~values~~ symbols, if the amplitude of the real part of said one of said sample ~~symbol~~ symbols is equal to of less than said threshold value;

setting the sign of the real part of each of a ~~second~~ the set of a plurality of sample symbols to positive and the amplitude of the real part of each of a ~~second~~ the set of a plurality of sample symbols to half the amplitude and of amplitude of the real part of said one of said sample symbols, if the amplitude of the real part of said one of said sample ~~symbol~~ symbols is greater than said threshold value; and

setting the sign of the imaginary part of each of ~~a-second~~ the set of a plurality of sample symbols to negative and the amplitude ~~value~~ of the imaginary part of each of a ~~second~~ the set of a plurality of sample symbols ~~equal~~ to one half the amplitude of the real part said one said sample symbols, if the amplitude of the real part of said one of said sample ~~symbol~~ symbols is greater than said threshold value.

7. (Currently Amended) The method of claim 6 wherein the steps of ~~the method~~ rearranging, obtaining, comparing, setting the amplitude, setting the sign of the real part, and setting the sign of the imaginary part are repeated for each of said plurality of sample symbols.